VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a Major, Municipal permit. The effluent limitations contained in this permit will maintain the Water Quality Standards (WQS) of 9 VAC 25-260. The discharge results from the treatment of municipal wastewater (SIC Code: 4952 – Sewerage Systems). This permit action consists of reissuing the permit with revisions to the permit, as needed, due to changes in applicable laws, guidance, and available technical information.

1.	Facility Name and Moores Creek Regi Rivanna Water and 695 Moores Creek Charlottesville, VA Location: 695 Moores	onal STP Sewer Author Lane 22902	•			
2.	Permit No. VA0025	5518			Expiration Date:	April 30, 2011
3.	Owner Contact: Name: Robert Wichser Title: Director, Water and Wastewater Telephone No: 434-977-2970 x155					
4.	Application Comple	ete Date: Octo	ober 21, 2010			
	Permit Drafted By: Reviewed By:	Eric Millard Jason Damer Dawn Jeffrie		Date: Date:	February 20, 2011 February 21, 2011 February 22, 2011	
	Public Comment Pe	eriod: March 2	24, 2011 to April 23, 2011	l		
5.	Receiving Stream N Watershed Name:	Basi Secti Spec Impa	ores Creek n: James (Middle) ion: 10 ial Standards: none nired ☑ Yes □ No V-H28R Upper Rivanna F	River/Moo	River Mile: 0.19 Subbasin: N/A Class: III Tidal Waters Yes ores Creek	☑ No
6.	Operator License R	equirements p	per 9 VAC 25-31-200.C:	I		
7.	Reliability Class pe	r 9 VAC 25-7	790: I (Assigned Septemb	per 13, 197	77)	
8.	Permit Characteriza	ation:				
	☐ Private ☐ Fede☐ Possible Intersta		tate	☐ PV(Document		
9.	Description of Trea	tment Works	Treating Domestic Sewa	ge:		Appendix A
	Total Number of O	utfalls = 1				
	Operation and Mair	ntenance (O&)	M) Manual: Approved Ja	nuary 5, 2	2007	

10. Discharge Location Description and Receiving Waters Information:

Appendix B

11. Antidegradation Review & Comments per 9 VAC 25-260-30: Tier: 1

The State Water Control Board's WQS includes an antidegradation (AD) policy. All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 waters have water quality that is better than the WQS. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 waters are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The AD review begins with a Tier determination. Moores Creek in the immediate vicinity of the discharge was determined to be a Tier 1 water based on the fact that Moores Creek has been identified as having an aquatic life impairment. Antidegradation baselines are not calculated for Tier 1 waters.

12. Site Inspection: Performed by: Bill Maddox Date: March 19, 2010

13. Effluent Screening and Effluent Limitations:

Appendix C

- 14. Effluent toxicity testing requirements included per 9 VAC 25-31-220.D: ☑ Yes ☐ No Appendix D
- 15. Management of Sewage Sludge: Sewage sludge utilization and disposal consists of aerobic digestion and dewatering. Sludge is shipped offsite through contract hauler McGill Environmental Systems to Waverly, Virginia for composting under permit no. VDH BUR154.
- 16. Permit Changes and Bases for Special Conditions:

Appendix E

- 17. Material Storage per 9 VAC 25-31-280.B.2: This permit requires that the facility's O&M Manual include information to address the management of wastes, fluids, and pollutants which may be present at the facility, to avoid unauthorized discharge of such materials.
- 18. Antibacksliding Review per 9 VAC 25-31-220.L: The Total Recoverable Copper limits were removed at this reissuance. See Appendix D for the evaluation that demonstrates why the removal of the Total Recoverable Copper limits complies with Antibacksliding provisions of the VPDES Permit Regulation.
- 19. Impaired Use Status Evaluation per 9 VAC 25-31-220.D: Moores Creek in the immediate vicinity of the discharge is listed as impaired for bacteria and aquatic life. TMDLs have been prepared and approved for the Rivanna River Watershed to address the bacterial and aquatic life impairments. This facility is addressed in the current Bacteria TMDL and was assigned an E. coli wasteload allocation (WLA) of 2.62 x 10¹³ cfu/yr which is based on the design flow of 15 MGD and a concentration of 126 cfu/100 mL. The facility is also addressed in the Benthic TMDL and was assigned a Sediment WLA of 1.01 x 10⁶ lbs/yr which is based on the design flow of 15 MGD and a TSS concentration of 22 mg/L.
- 20. Regulation of Users per 9 VAC 25-31-280.B.9: N/A This facility is owned by a municipality.

21.	Storm Water Management per 9 VAC 25-31-120: Application Required? ☑ Yes □ No									
	This facility has obtained coverage under the VPDES General Permit for Storm Water Discharges Associated with Industrial Activity (Permit No. VAR051387).									
22.	Compliance Schedule's per 9 VAC 25-31-250: None required by this permit.									
23.	3. Variances/Alternative Limits or Conditions per 9 VAC 25-31-280.B, 100.J, 100.P, and 100.M: The permittee has requested waivers from sampling and reporting fecal coliform, oil & grease, TDS, and Form 2A, Part D Expanded Effluent Testing as part of the application. The waiver requests have been approved based on the justification provided by the permittee and the fact that EPA did not comment on the waiver requests.									
24.	Financial Assurance Evaluation per 9 VAC 25-650-10: N/A – This facility is owned by a municipality.									
25.	Nutrient Trading Regulation per 9 VAC 25-820: Watershed General Permit (WGP) Required: ☑ Yes ☐ No If Yes: Permit No.: VAN040076 Date General Permit Effective: January 1, 2007									
	The load limit for TN is 274,100 lbs/yr and TP is 22,842 lbs/year. These mass or load limits are established in 9 VAC 25-720-60.C. based on the design flow as of July 1, 2005 (15 MGD).									
26.	Threatened and Endangered (T&E) Species Screening per 9 VAC 25-260-20 B.8: The Department of Game and Inland Fisheries (DGIF) requested to review the application at this reissuance. Because this is not an issuance or reissuance that allows increased discharge flows, Department of Conservation and Recreation (DCR) T&E screening is not required. The US Fish and Wildlife Service (USFWS) also provided comments. DGIF's and USFWS's comment letters were provided to the permittee and have been included in the permit processing file.									
	DGIF recommended that the draft EPA Ammonia-N criteria be implemented in this permit, expressed concern with copper discharges from the facility, recommended UV disinfection be utilized instead of chlorine, expressed support for the proposal to upgrade the facility to include nutrient removal technology, and expressed that they would support measures to upgrade the facility in order to reduce the discharge of copper to the greatest extent possible DGIF also stated, "Based on the dilution factor of the receiving stream, and provided the project adheres to the effluent limitations and monitoring requirements specified in the permit, DGIF does not anticipate the re-issuance of this existing permit to result in adverse impact to this designated T&E water or its associated species."									
	USFWS recommended that mussel surveys be conducted in the vicinity of the discharge for the James spinymussel, recommended using the EPA 2009 Draft Ammonia Criteria to develop the effluent limits for this discharge to avoid adverse effects to mussels, recommended that permit limits for copper be derived based on the best available information on copper concentrations known to be protective of mussels, and recommended that DEQ request a review of the project by DGIF.									
27.	Virginia Environmental Excellence Program (VEEP) Evaluation per § 10.1-1187.1-7: Is this facility considered by DEQ to be a participant in the Virginia Environmental Excellence Program in good standing at either the Exemplary Environmental Enterprise (E3) level or the Extraordinary Environmental Enterprise (E4) level? ☑ Yes □ No									

28. Public Notice Information per 9 VAC 25-31-290: All pertinent information is on file, and may be inspected and copied by contacting Eric Millard at: DEQ-Valley Regional Office, P.O. Box 3000, Harrisonburg, Virginia 22801, Telephone No. (540) 574-7813, eric.millard@deq.virginia.gov.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

29. Historical Record:

- Plans & Specs approved by SWCB (Certif. No. 423): July 28, 1958

- NPDES Permit Issuance with 2.534 MGD design: November 30, 1974 October 26, 1981

- CTO issued for 15 MGD facility:

- Plans & Specs approved for dechlorination facilities: November 16, 1988

- Modification to remove Zinc effluent limitation: December 14, 2001 - Modification to remove composting operation: March 9, 2007

- CTO issued for nutrient removal technology: Expected during permit term

APPENDIX A

DESCRIPTION OF TREATMENT WORKS TREATING DOMESTIC SEWAGE

Outfall 001

Operations Contributing Wastewater:

The facility serves the Charlottesville-Albemarle County service area.

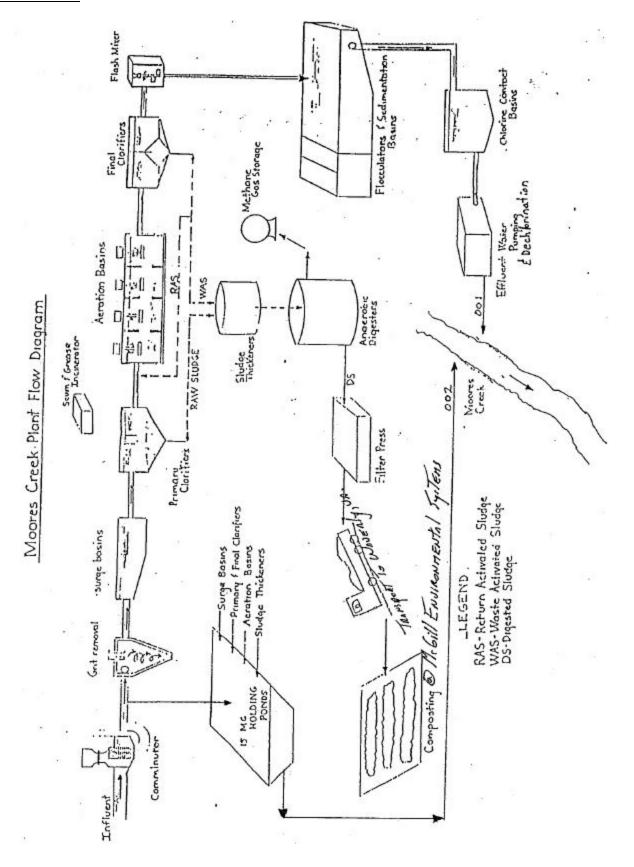
<u>Treatment Works Description (Unit by unit):</u>

See the flow schematic from the application that follows. Although not shown on the flow schematic, the facility now has the capability of disinfecting the effluent using either chlorination or UV. The facility is currently being upgraded to include nutrient removal technology. The facility upgrades are expected to be complete during this permit term.

Flow:

Design Average Flow = 15 MGD Monthly average flow (February 2010 – January 2011) = 9.0 MGD

Flow Schematic

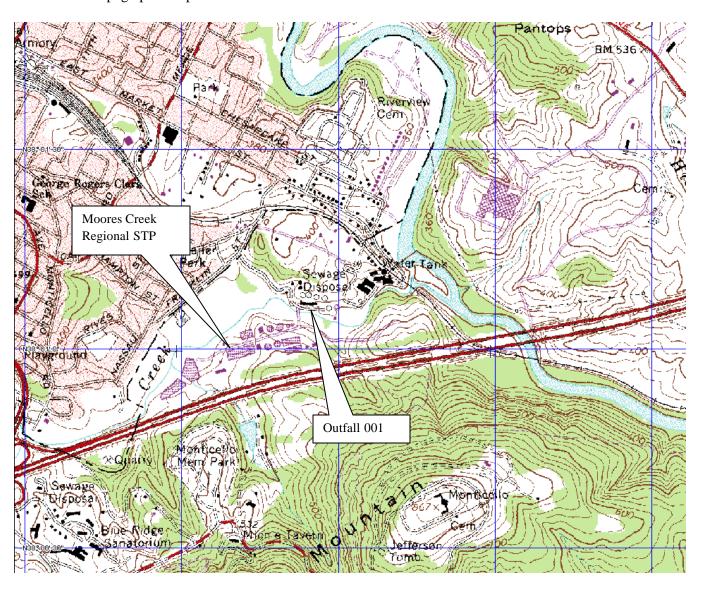


Appendix A - Page 2

APPENDIX B

DISCHARGE LOCATION DESCRIPTION AND RECEIVING WATERS INFORMATION

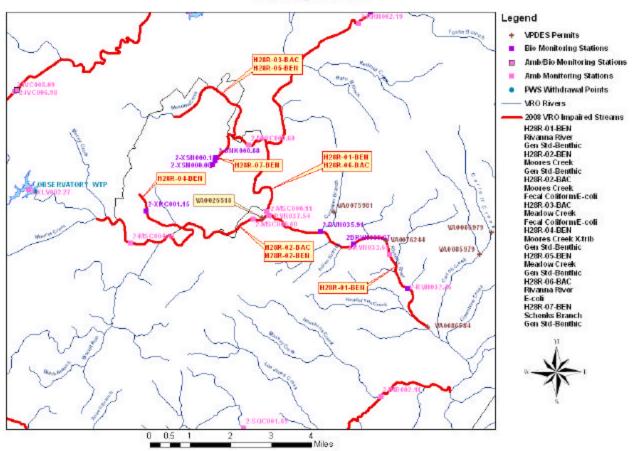
This facility discharges to Moores Creek in Albemarle County. The locations of the STP and Outfall 001 are shown on the topographic map below.



PLANNING INFORMATION

Relevant points of interest within the watershed and in the vicinity of the discharge are shown on the enclosed Water Quality Assessment TMDL Review and corresponding map.

Moores Creek Regional STP - Water Quality Assessments Review January 18, 2011



		WATER QUAL	ITY ASSESSMENT	S REVIEW		
			E JAMES RIVER BA			
			1/18/2010			
		IMP	AIRED SEGMENTS	<u> </u>		
SEGMENT ID	STREAM	SEGMENT START	SEGMENT END		PARAMETER	
H28R-01-BEN	Rivanna River	41.93	30.77	11.16	Benthic	
H28R-02-BAC	Moores Creek	6.37	0.00	6.37	Fecal Coliform, E-	coli
H28R-02-BEN	Moores Creek	6.37	0.00	6.37	Benthic	
H28R-03-BAC	Meadow Creek	4.00	0.00	4.00	Fecal Coliform, E-	coli
H28R-04-BEN	Moores Creek X-Trib	1.57	0.00	1.57	Benthic	
H28R-05-BEN	Meadow Creek	4.00	0.00	4.00	Benthic	
H28R-06-BAC	Rivanna River	41.93	36.65	5.28	E-coli	
H28R-07-BEN	Schenks Branch	1.13	0.00	1.13	Benthic	
			PERMITS	:		
PERMIT	FACILITY	STREAM	RIVER MILE	LAT	LONG	WBID
VA0025518	Moores Creek STP		0.19	380107	0782725	VAV-H28R
VA0025310 VA0075981	Comfort Inn Monticello		0.66	380113	0782528	VAV-H29R
VA0075981 VA0076244	Stone Robinson Elem		34.05	380036	0782403	VAV-H29R VAV-H29R
VA0076244 VA0085979	Keswick STP-001	Carroll Creek X Trib	0.03	380017	0782132	VAV-H29R VAV-H29R
VA0085575	Glenmore STP	Rivanna River	31.35	375844	0782258	VAV-H29R
VA0080584 VA0085979	Keswick STP-004	Broadmoor Lake	3.22	380045	0785112	VAV-H29R VAV-H29R
V710000073	RESWICK OTT 004		-		0700112	V/(V TIZOIC
			TORING STATION	NS		
<u>STREAM</u>	<u>NAME</u>	RIVER MILE	RECORD	<u>LAT</u>	<u>LONG</u>	
Moores Creek UT- Ra	2-XLV002.27	2.27	4/18/05	380147	783344	
Moores Creek	2-MSC000.60	0.6	7/1/91	380106	782739	
Meadow Creek	2-MWC000.60	0.6	7/1/91	380241	782746	
Rivanna River	2-RVN033.65	33.65	10/7/68	380018	782358	
Rivanna River	2-RVN037.54	37.54	7/1/93	380115	782718	
Rivanna River	2-RVN032.46	32.46	2/19/02	375934	782329	
Moores Creek	2-MSC000.11	0.11	7/1/01	38110	782714	
Moores Creek	2-MSC004.43	4.43	7/2001	38037	-78310	
Buck Island Creek	2-BID002.11	2.11	7/2001	375715	-782415	
Schenks Branch	2-SNK000.88	0.88	3/30/05	380226	0782838	
Schenks Branch UT	2-XSN000.08	0.08	3/30/05	380221	0782841	
Schenks Branch UT	2-XSN000.18	0.18	3/30/05	380216	0782845	
Rivanna River	2-RVN035.91	35.91	5/21/91	380049	0782550	
Rivanna River	2BRVN032.46	32.46		375934	0782329	
Rivanna River	2BRVN035.67	35.67		380032	-782456	
Moores Creek X-Trib	2-XRC001.15	1.15		380118	0783034	
		PUBLIC W	ATER SUPPLY INT	TAKES		
OWNER	STREAM	RIVER MILE				
None						
	W	ATER QUALITY MAN	NAGEMENT PLAN	NING REGULATION		+
Is this discharge add	ressed in the WQMP re					
		ons does the WQMP re	gulation impose on th	nis discharge?		
PARAMETER	ALLOCATION	- '		-		
Nutrients under the w	vatershed General Per	mit				
Tamento under tile v	valorshed General Fer		1	!		<u> </u>
			ATERSHED NAME			
		VAV-H28R Upp	per Rivanna River/Mo	ores Creek		

FLOW FREQUENCY DETERMINATION

MEMORANDUM DEPARTMENT OF ENVIRONMENTAL QUALITY

VALLEY REGIONAL OFFICE

4411 Early Road - P.O. Box 3000

Harrisonburg, VA 22801

SUBJECT: Flow Frequency Determination

Moores Creek Regional STP, VPDES Permit No. VA0025518, Albemarle County

TO: Permit Processing File

FROM: Eric Millard

DATE: February 3, 2011

This me mo supersedes Larry Hough's flow frequency determination dated May 18, 2004. The subject facility discharges to the Moores Creek near Charlottesville, VA. Stream flow frequencies are required at this site for use by the permit writer in developing effluent limitations for the VPDES permit reissuance.

The VDEQ conducted 11 flow measurements on Moores Creek between August 24, 1999 and November 2, 2001. These measurements were made upstream of the Moores Creek Regional STP discharge point. In the previous flow frequency determination, the Moores Creek measurements and the Rivanna River gage near Palmyra, VA (#02034000) daily mean values for that corresponding day were plotted on a log/log graph, and a best fit line (and equation) for the data set was established. The previous flow frequency determination did not account for the dischargers and withdrawals between Moores Creek and the gage.

At this reissuance, the North Fork Rivanna River gage near Earlysville (#02032640) was utilized in the flow frequency determination. This gage was not utilized in prior flow frequency determinations because 10 years of stream data were not previously available. The site specific Moores Creek data were correlated with the same-day daily mean flow values from the North Fork Rivanna River gage near Earlysville. The period of record for this gage is 1993 to present. The site specific measurements and daily mean values were plotted on a log/log graph and a regression analysis performed. The data sets correlated well, allowing a best-fit line and corresponding equation to be established. Flow frequency values for Moores Creek were then calculated using this equation and the flow statistics for the selected reference gage. Flow frequency values for the subject discharge point are given below.

North Fork Rivanna River Gage near Earlysville, VA (#02032640):

Drainage Area = 108 mi^2

1Q30 =	0.30 cfs	High Flow 1Q10 =	18 cfs
1Q10 =	0.75 cfs	High Flow 7Q10 =	20 cfs
7Q10 =	1.0 cfs	High Flow 30Q10 =	30 cfs
30Q10 =	2.6 cfs	HM =	19 cfs
30O5 =	5.3 cfs		

Moores Creek above Moores Creek Regional STP discharge point:

Drainage Area = 34.9 mi^2

1Q30 =	0.46 cfs	(0.30 mgd)	High Flow $1Q10 =$	6.60 cfs	(4.26 mgd)
1Q10 =	0.84 cfs	(0.54 mgd)	High Flow 7Q10 =	7.07 cfs	(4.57 mgd)
7Q10 =	1.01 cfs	(0.65 mgd)	High Flow 30Q10 =	9.19 cfs	(5.94 mgd)
30Q10 =	1.88 cfs	(1.22 mgd)	HM =	6.84 cfs	(4.42 mgd)
30Q5 =	2.98 cfs	(1.92 mgd)			

The analysis assumes that there are no other significant discharges or withdrawals influencing the flow in Moores Creek upstream of the discharge point.

The high flow months are December through April.

For DO modeling purposes, the 7Q10 flow of 7.52 MGD has been carried forward from the previous permit for the Rivanna River just prior to the confluence with Moores Creek.

Reviewer: BDK Date: 2/4/11

EFFLUENT/STREAM MIXING EVALUATION

Mixing zone predictions were made with the Virginia DEQ Mixing Zone Analysis Version 2.1 program. The predictions are based on the discharge and receiving stream characteristics, and are presented below.

<u>Annual</u>

Effluent Flow = 15 MGD Stream 7Q10 = 0.65 MGD Stream 30Q10 = 1.22 MGD Stream 1Q10 = 0.54 MGD Stream slope = 0.004 ft/ft Stream width = 25 ft Bottom scale = 3 Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 1.1141 ft Length = 515.2 ft Velocity = .8697 ft/sec Residence Time = .0069 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = 1.1391 ft Length = 505.15 ft Velocity = .8816 ft/sec Residence Time = .0066 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = 1.1093 ft Length = 517.19 ft Velocity = .8674 ft/sec Residence Time = .1656 hours

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.

Wet

Effluent Flow = 15 MGD Stream 7Q10 = 4.57 MGD Stream 30Q10 = 5.94 MGD Stream 1Q10 = 4.26 MGD Stream slope = 0.004 ft/ft Stream width = 30 ft Bottom scale = 3 Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 1.1364 ft Length = 735.79 ft Velocity = .8886 ft/sec Residence Time = .0096 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = 1.1849 ft Length = 709.17 ft Velocity = .9119 ft/sec Residence Time = .009 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = 1.1253 ft Length = 742.19 ft Velocity = .8832 ft/sec Residence Time = .2334 hours

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.

APPENDIX C

EFFLUENT SCREENING AND EFFLUENT LIMITATIONS

EFFLUENT LIMITATIONS

A comparison of technology and water quality-based limits was performed, and the most stringent limits were selected. The selected limits are summarized in the table below.

Outfall 001 Final Limits Design Flow: 15 MGD

					2 18.511 110 11 10 1110 1		
BASIS FOR	EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS			
S	Monthly Avg.		M aximum		Frequency	Sample Type	
4	N	NL		IL	Continuous	TIRE	
	Monthl	ly Avg.	Weekl	y Avg.			
1,3,5	11 mg/L	620 kg/d	16 mg/L	910 kg/d	1/Week	24 HC	
1,8	22 mg/L	1,200 kg/d	33 mg/L	1,900 kg/d	1/Month	24 HC	
3,5	1.0 mg/L	57 kg/d	1.5 mg/L	85 kg/d	3 Days/Week	24 HC	
3	6.	.6	8.1		1/Week	24 HC	
3	0.0	0.0070		074	1/2 Hours	Grab	
3,9	12	126		Ā	4/Month	Grab	
3,9	12	126		Ā	4 Day s/Week 10 am to 4 pm	Grab	
	Yearly A	Average	Maximum				
6	N	L	NA		1/Month	Calculated	
6,7	0.	.5	NA		1/Year	Calculated	
6	N	L	NA		1/Month	Calculated	
6,7	6.	.0	NA		1/Year	Calculated	
	Minimum		Maximum				
3	6.	6.0		.0	1/Day	Grab	
3,5	6.	.3	NA		1/Day	Grab	
2,3	0.25	5***	NA		1/2 Hours	Grab	
	FOR LIMIT S 4	FOR LIMIT S Month! 4 N Month! 1,3,5 11 mg/L 1,8 22 mg/L 3,5 1.0 mg/L 3 6. 3 0.0 3,9 12 Yearly A 6 N 6,7 0.6 6,7 6. Mini 3 6. 3,5 6.	FOR LIMIT S Monthly Avg. 4 NL Monthly Avg. 1,3,5 11 mg/L 620 kg/d 1,8 22 mg/L 1,200 kg/d 3,5 1.0 mg/L 57 kg/d 3 6.6 3 0.0070 3,9 126 Yearly Average 6 NL 6,7 0.5 6 NL 6,7 6.0 Minimum 3 6.0 3,5 6.3	FOR LIMIT S Monthly Avg. Max. 4 NL NC Weekl 1,3,5 11 mg/L 620 kg/d 16 mg/L 1,8 22 mg/L 1,200 kg/d 33 mg/L 3,5 1.0 mg/L 57 kg/d 1.5 mg/L 3 6.6 8 3 0.0070 0.0 3,9 126 NC S NC	FOR LIMIT Monthly Avg. Maximum	FOR LIMIT Monthly Avg. Maximum Frequency	

NL = No Limitation, monitoring required

NA = Not Applicable

TIRE = Totalizing, Indicating, and Recording equipment

 $24 \ HC = 24 \text{-Hour Composite}$

4/Month = 4 samples taken during the calendar month, no less than 7 days apart

1/Year = Annual sampling with the results submitted with the DMR due January 10th of each year

* = Applicable only when chlorination is used for disinfection

** - Applicable if an alternative to ablaving tion is used for disi

** = Applicable if an alternative to chlorination is used for disinfection.

*** = Reduced chlorine contact based on extensive permittee monitoring approved 8/22/88.

= Applicable upon issuance of a CTO for the upgraded facility that includes nutrient removal technology

Basis for Effluent Limitations

- 1. Federal Effluent Requirements (Secondary Treatment Regulation 40CFR133)
- 2. Best Professional Judgment (BPJ)
- 3. Water Quality Standards (9 VAC 25-260)
- 4. VPDES Permit Regulation (9 VAC 25-31)
- 5. Regional Stream Model
- 6. Guidance Memo No. 07-2008, Amendment No. 2, 10/23/07, Permitting Considerations for Facilities in the Chesapeake Bay Watershed
- 7. Annual average concentration limits are based on the Technology Regulation (9 VAC 25-40)
- 8. Moores Creek Benthic TMDL
- 9. Moores Creek Bacteria TMDL

LIMITING FACTORS - OVERVIEW:

The following potential limiting factors have been considered in developing this permit and fact sheet:

Water Quality Management Plan Regulation (9 VAC 25-720)					
A. TMDL limits	E. coli, TSS				
B. Non-TMDL WLAs	None				
C. CBP (TN & TP) WLAs	TN and TP by coverage under VAN040076				
Federal Effluent Guidelines	cBOD ₅ , TSS, pH				
BPJ/Agency Guidance limits	TRC (contact)				
Water Quality-based Limits - numeric	cBOD ₅ , DO, TKN, TRC (effluent), E. coli, pH				
Water Quality-based Limits - narrative	None				
Whole Effluent Toxicity	None				
Storm Water Limits	Facility coverage under the VPDES Storm Water				
	Industrial General Permit				
VPDES Individual Permit Regulation	Flow				

EVALUATION OF THE EFFLUENT - CONVENTIONAL POLLUTANTS

The discharge for this facility was previously modeled using the Regional Stream Model (v 4.11) and is included as a component of a larger, three part Rivanna River model that begins at the Moores Creek confluence with the Rivanna River and continues downstream to 1.14 miles downstream of the Rivanna River confluence with Raccoon Creek. Because the receiving stream characteristics at the point where Moores Creek flows into the Rivanna River remain largely unchanged, the limits established in the existing Rivanna River model are considered to be protective of the DO WQS in the Rivanna River. The model-based cBOD $_5$ limits have been carried forward from the previous permit. The modeling information is available for review at the DEQ-Valley Regional Office or electronically upon request.

The concentrations below were demonstrated to maintain the DO WQS in the Rivanna River.

 $\begin{array}{lll} cBOD_5 & = & 11 \text{ mg/L} \\ TKN & = & 4 \text{ mg/L} \\ DO & = & 6.3 \text{ mg/L} \end{array}$

Because the treatment needed to achieve the Ammonia-N limits imposed in the permit is expected to consistently reduce the effluent $cBOD_5$ to concentrations well below the $cBOD_5$ effluent limit as has been previously demonstrated, the monitoring frequency of 1/Week has been carried forward from the previous permit.

Based on the model, it was determined that no TKN limits are needed because the applied Ammonia-N limits will adequately control TKN in the discharge. The TKN value utilized in the model is based on the Ammonia-N limit of 1.0 mg/L that was utilized in a 1986 Monte Carlo model that was used to determine the BOD₅ WLA that was previously included in the WQMP. The DO-based Ammonia-N limits (concentration and loading) have been carried forward from the previous permit for the dry season, with the only change being that the dry season months have been changed from June – November to May – November.

The DO limit has been carried forward from the previous permit.

The TSS limits are more stringent than the Secondary Treatment Regulation, are consistent with the TMDL WLA, and have been carried forward from the previous permit.

The pH limits reflect the current WQS for pH in the receiving stream and have been carried forward from the previous permit.

<u>EVALUATION OF THE EFFLUENT – DISINFECTION</u>
The facility utilizes UV for disinfection. An E. coli concentration limit of 126 N/100 mL is required to meet the E. coli WLA established in the TMDL and has been carried forward from the previous reissuance. The monitoring frequency has been set at 4 Days/Week based on the reliability class and the alarms on the transmissivity and intensity meters for the UV lights. A requirement to update the O&M Manual (Part I.F.4.a.(5) to include procedures for documenting minimum UV intensity and transmittance on a daily basis has been included in the permit. Contact TRC limits have also been specified in the permit, but are only applicable when the facility utilizes chlorine as the sole disinfection method. When chlorine is utilized as the sole disinfection method, E. coli monitoring is required 4/Month to demonstrate compliance with the limit.

EVALUATION OF THE EFFLUENT – NUTRIENTS

In accordance with § 62.1-44.19:14.C.5. of the Code of Virginia, this Significant Discharger has submitted a Registration Statement and DEO has recognized that they are covered under the General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for TN and TP Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia (9 VAC 25-820-10 et seq.). The effective date of coverage is January 1, 2007. Coverage under the General Permit will expire December 31, 2011.

The load limit for TN is 274,100 pounds per calendar year and TP is 22,842 pounds per calendar year. These mass or load limits are established in 9 VAC 25-720-70.C based on the design flow as of July 1, 2005 (15 MGD).

Annual average concentration limits of TN = 6.0 mg/L and TP = 0.50 mg/L have been included in the permit per the requirements of 9 VAC 25-40-70.A. and will become effective upon issuance of a CTO for the upgraded facility.

EVALUATION OF THE EFFLUENT – TOXIC POLLUTANTS

Receiving Stream Data

Water quality data for the receiving stream were obtained from Ambient Monitoring Station No.2-MSC000.60 on Moores Creek at the Moores Creek Regional STP bridge. Toxic substances are believed present because there are data available that indicates toxic substances are present at or immediately above the point of discharge. Using the data collected from this ambient stream gage, expected values are determined using the STAT.exe program for use in the determination of WLA for WQS parameters. Parameters with data that are less than ML/MDL or less than the QL listed in the toxic parameters table in this attachment are not used to determined expected values and current downstream mix concentrations.

Stream Parameter	Value	Units
Mean Hardness (as CaCO ₃) =	39	mg/L
90 th Percentile Temperature (Annual) =	24.0	°C
90 th Percentile Temperature (Wet season*) =	12.6	°C
90 th Percentile Maximum pH =	8.0	SU
10 th Percentile Maximum pH =	6.8	SU
Stream Parameter	Expected Value	Units
Copper, dissolved	0.93	ug/L

Effluent Data

The pH values were obtained from the daily operational data submitted by the permittee. The hardness value was obtained from monitoring data submitted by the permittee and data collected during DEQ inspections. The temperature data were submitted by the permittee and are temperature measurements taken at the aeration basin, not of the effluent.

Effluent Parameter	Value	Units
Mean Hardness (as CaCO ₃) =	69	mg/L
90 th Percentile Temperature (Annual) =	24.7	°C
90 th Percentile Temperature (Wet season*) =	18.9	°C
90 th Percentile Maximum pH =	7.0	SU
10 th Percentile Maximum pH =	6.4	SU

^{*} Wet Season = December through April

WQC and WLAs were calculated for the WQS parameters for which data are available. Those WQC and WLAs are presented in this appendix. Current agency guidelines recommends the evaluation of toxic pollutant limits for TRC and Ammonia-N based on default effluent concentrations of 20 mg/L and 9 mg/L, respectively. The effluent data were analyzed per the protocol for evaluation of effluent toxic pollutants included in this appendix with the following results:

- TRC: More stringent limits were determined to be necessary at this reissuance. Because the facility now utilizes UV disinfection, a schedule of compliance has been not included at this reissuance. Also, because the facility may utilize chlorination in the treatment process for purposes other than disinfection, the permit requires effluent TRC monitoring whenever TRC is utilized regardless of the disinfection method.
- Ammonia-N: An evaluation for Ammonia-N toxicity indicates that WQBEL are required. The dry season limits are 3.3 mg/L and 4.1 mg/L, monthly average and weekly average, and the wet season limits are 6.6 mg/L and 8.1 mg/L, monthly average and weekly average. The DO-based limits required for the dry season are more stringent than the toxicity-based limits; therefore, the DO-based limits have been carried forward from the previous permit. The wet season toxicity-based limits are more stringent than those in the previous permit. Based on a review of the facility performance, the permittee is currently able to meet the more stringent limits and a schedule of compliance is not included at this reissuance.

An evaluation of the facility's records indicates that the dry season Ammonia-N concentration is averaging 33% of the monthly average limit; therefore, a reduction in monitoring frequency for dry season Ammonia-N is warranted – from a frequency of 1/Day to a frequency of 3/Week.

An evaluation of the facility's records indicates that the wet season Ammonia-N concentration is averaging 13% of the monthly average limit; therefore, a reduction in monitoring frequency for dry season Ammonia-N is warranted – from a frequency of 1/Day to a frequency of 1/Week.

- Copper: The previous permit established Copper monthly and weekly average limits of 10 ug/L. These limits were determined based on limited effluent data. At this reissuance, additional effluent data provided by the permittee indicates that there is not a reasonable potential for copper to exceed water quality criteria. The removal of the copper limits from the permit at this reissuance complies with antibacksliding regulation because if these data were available at the previous reissuance, a limit for Copper would not have been found to be necessary to protect WQS in the receiving stream.
- Additional monitoring data is needed for two pollutants due to the lack of effluent quality data. The permittee must monitor the effluent at Outfall 001 for the substances noted in Attachment A of the permit once after the start of the third year from the permit's effective date.

WQS-WLA Spreadsheet Input:

WATER QUALITY CRITERIA / WASTE LOAD ALLOCATION ANALYSIS

Facility Name:
Moores Creek Regional STP
D O:

Permit No.: VA0025518 Date: 2/16/2011 Receiving Stream:

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows	Stream Flows		ation -		Effluent Information		
Mean Hardness (as CaCO3) =	39 mg/L	1Q10 (Annual) =	0.54 MGD	Annual	- 1Q10 Flow =	100 %	Mean Hardness (as CaCO3) =	69 mg/L	
90% Temperature (Annual) =	24 deg C	7Q10 (Annual) =	0.65 MGD		- 7Q10 Flow =	100 %	90% Temp (Annual) =	24.7 deg	
90% Temperature (Wet season) =	12.6 deg C	30Q10 (Annual) =	1.22 MGD		- 30Q10 Flow =	100 %	90% Temp (Wet season) =	18.9 deg	
90% Maximum pH =	8 SU	1Q10 (Wet season) =	4.26 MGD	Wet Season	- 1Q10 Flow =	100 %	90% Maximum pH =	7 SU	
10% Maximum pH =	6.8 SU	30Q10 (Wet season) =	5.94 MGD		- 30Q10 Flow =	100 %	10% Maximum pH =	6.4 SU	
Tier Designation =	1	30Q5=	1.92 MGD				Current Discharge Flow =	15.000 MGD	
Public Water Supply (PWS) Y/N? =	N	Harmonic Mean =	4.42 MGD				Discharge Flow for Limit Analysis =	15.000 MGD	
V(alley) or P(iedmont)? =	V								
Trout Present Y/N? =	N								
Early Life Stages Present Y/N? =	Y								
Footnotes:									
All concentrations expressed as micrograms/liter (u All formations expressed as micrograms/liter (u		rwise.		10. WLA = Waste Lo	ad Allocation (based on st				

- 2. All flow values are expressed as Million Gallons per Day (MGD).

- 2. All flow values are expressed as Million Gallons per Day (McD).
 3. Discharge volumes are highest monthly average or 2C maximum for industries and design flows for Municipals.
 4. Hardness expressed as mg1 CaCO3. Standards calculated using Hardness values in the range of 25-400 mg1 CaCO3.
 5. "Public Water Supply" protects for fish & water consumption. "Other Surface Waters" protects for fish consumption only.
 6. Carricogen "7" indicates carricogenic parameter.
 7. Ammoriia WCSs selected from separate tables, based on pH and temperature.

- Metals measured as Dissolved, unless specified otherwise.
 WLA = Waste Load Allocation (based on standards).

- 11. WLAs are based on mass balances (less background, if data exist).

- 11. WLAs are based on mass balances (less background, if data exist).

 12. Acute 1 hour way, concentration not to be exceeded more than 1/3 years.

 13. Chronic 4 day avg. concentration (30 day avg. for Ammonia) not to be exceeded more than 1/3 years.

 14. Mass balances employ 10:10 for Acute, 300:10 for Chronic, Ammonia, 70:10 for Other Chronic, 300:5 for Non-carcinogens, and Hammonic Mean for Carcinogens. Acutal flows employed are a function of the mixing analysis and may be less than the actual flows.

 15. Effluent Limitations are calculated elsewhere using the minimum WLA and EPA's statistical approach (Technical Support Document).

WQS-WLA Spreadsheet Output:

Eacility Name:	Permit No.:				_
Moores Creek Regional STP	VA0025518				
Receiving Stream:	Date:				
Moores Creek	2/16/2011	_	Cu	ırrent Downstr	eam
		Expected Value	M	lix Concentration	ons
Toxic Parameter and Form	Carcinogen?	of Upstream Data	Acute	Chronic	H-Health
Ammonia-N (Annual)	N	0	0	0	0
Ammonia-N (Wet Season)	N	0	0	0	0
Chloride	N	0	0	0	0
Chlorine, Total Residual	N	0	0	0	0
Copper	N	0.93	0.032317	0.038626	0.1055319

Facility Name: Moores Creek Regional STP Receiving Stream:	WA 15.000	TER QUAL	w - Mix per "Mixer"		NON-ANT WASTE LOA	TIONS	
Moores Creek			Human F	lealth	15.000 MGD Di	scharge - Mix per "Mixe	er"
	Aquatic Prof	tection	Public Water	Other Surface	Aquatic Prote	ction	Human
Toxic Parameter and Form	Acute	Chronic	Supplies	Waters	Acute	Chronic	Health
Ammonia-N (Annual)	3.6E+01 mg/L	3.0E+00 mg/L	None	None	3.7E+01 mg/L	3.3E+00 mg/L	N/A
Ammonia-N (Wet Season)	3.3E+01 mg/L	4.7E+00 mg/L	None	None	4.2E+01 mg/L	6.6E+00 mg/L	N/A
Chloride	8.6E+02 mg/L	2.3E+02 mg/L	2.5E+02 mg/L	None	8.9E+02 mg/L	2.4E+02 mg/L	N/A
Chlorine, Total Residual	1.9E-02 mg/L	1.1E-02 mg/L	None	None	2.0E-02 mg/L	1.1E-02 mg/L	N/A
Copper	9.3E+00	6.4E+00	1.3E+03	None	9.6E+00	6.7E+00	N/A

PROTOCOL FOR THE EVALUATION OF THE EFFLUENT – TOXIC POLLUTANTS

Toxic pollutants were evaluated in accordance with OWP Guidance Memo No. 00-2011 (8/24/00). Acute and Chronic WLAs (WLA_a and WLA_c) were analyzed according to the protocol below using a statistical approach (STAT.exe) to determine the necessity and magnitude of limits. Human Health WLAs (WLA_{hh}) were analyzed according to the same protocol through a simple comparison with the effluent data. If the WLA_{hh} exceeded the effluent datum or data mean, no limits were required. If the effluent datum or data mean exceeded the WLA_{hh}, the WLA_{hh} was imposed as the limit.

There are data available for dissolved metals immediately upstream of this discharge based on DEQ monitoring at ambient monitoring station No.2-MSC000.60 on Moores Creek at the RWSA WWTP Bridge. Using the data collected from this ambient stream gage, expected values are determined using the STAT.exe program for use in the determination of WLA for WQS parameters. Parameters with data that are less than ML/MDL or less than the QL listed in the toxic parameters table in Appendix C are not used to determined expected values and current downstream mix concentrations. An expected value for Copper was determined. No additional monitoring has occurred at that station since 2003.

The steps used in evaluating the effluent data are as follows:

- A. If all data are reported as "below detection" or < the required Quantification Level (QL), and at least one detection level is = the required QL, then the pollutant is considered to be not significantly present in the discharge and no further monitoring is required.
- B. If all data are reported as "below detection", and all detection levels are > the required QL, then an evaluation is performed in which the pollutant is assumed present at the lowest reported detection level.
 - B.1. If the evaluation indicates that no limits are needed, then the existing data set is adequate and no further monitoring is required.
 - B.2. If the evaluation indicates that limits are needed, then the existing data set is inadequate to make a determination and additional monitoring is required.
- C. If any data value is reported as detectable at or above the required QL, then the data are adequate to determine whether effluent limits are needed.
 - C.1. If the evaluation indicates that no limits are needed, then no further monitoring is required.
 - C.2. If the evaluation indicates that limits are needed, then the limits and associated requirements are specified in the draft permit.
 - C.3. (Exception for Metals data only) If the evaluation indicates that limits are needed, but the data are reported as a form other than "Dissolved", then the existing data set is inadequate to make a determination and additional monitoring is required.

Fact Sheet – VPDES Permit No. VA0025518 – Moores Creek Regional STP

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
		ME	TALS		
Antimony, dissolved	7440-36-0	0.2	Previously evaluated, no further monitoring required.		
Arsenic, dissolved	7440-38-2	1.0	Previously evaluated, no further monitoring required.		
Barium, dissolved	7440-39-3		Applicable to PWS waters only		
Cadmium, dissolved	7440-43-9	0.3	Previously evaluated, no further monitoring required.		
Chromium III, dissolved	16065-83-1	0.5	Previously evaluated, no further monitoring required.		
Chromium VI, dissolved	18540-29-9	0.5	Previously evaluated, no further monitoring required.		
Copper, dissolved	7440-50-8	0.5	4.7, 4.5,7.2,10, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.	b	C.1
Chromium, Total	7440-47-3		Applicable to PWS waters only		
Iron, dissolved	7439-89-6	1.0	Applicable to PWS waters only		
Lead, dissolved	7439-92-1	0.5	Previously evaluated, no further monitoring required.		
Manganese, dissolved	7439-96-5	0.2	Applicable to PWS waters only		
Mercury, dissolv ed	7439-97-6	1.0	Previously evaluated, no further monitoring required.		
Nickel, dissolved	7440-02-0	0.5	Previously evaluated, no further monitoring required.		
Selenium, total recoverable	7782-49-2	2.0	Previously evaluated, no further monitoring required.		
Silver, dissolved	7440-22-4	0.2	Previously evaluated, no further monitoring required.		
Thallium, dissolved	7440-28-0		Previously evaluated, no further monitoring required.		
Zinc, dissolved	7440-66-6	2.0	Previously evaluated, no further monitoring required.		
	PE	ESTICI	DES/PCBS		
Aldrin ^C	309-00-2	0.05	Previously evaluated, no further monitoring required.		
Chlordane ^C	57-74-9	0.2	Previously evaluated, no further monitoring required.		
Chlorpyrifos	2921-88-2	(5)	Previously evaluated, no further monitoring required.		
DDD ^c	72-54-8	0.1	< 0.05	b	A
DDE ^C	72-55-9	0.1	< 0.05	b	A
DDT ^C	50-29-3	0.1	Previously evaluated, no further monitoring required.		
Demeton	8065-48-3		Previously evaluated, no further monitoring required.		
Diazinon	333-41-5		NEW REQUIREMENT. Needs to be sampled.		
2,4-Dichlorophenoxy acetic acid (synonym = 2,4-D)	94-75-7		Applicable to PWS waters only		
Dieldrin ^C	60-57-1	0.1	< 0.05	b	A
Alpha-Endosulfan	959-98-8	0.1	Previously evaluated, no further monitoring required.		
Beta-Endosulfan	33213-65-9	0.1	Previously evaluated, no further monitoring required.		
Alpha-Endosulfan + Beta-Endosulfan			Previously evaluated, no further monitoring required.		
Endosulfan Sulfate	1031-07-8	0.1	Previously evaluated, no further monitoring required.		
Endrin	72-20-8	0.1	< 0.05	b	A
Endrin Aldehyde	7421-93-4		<0.05	b	A
Guthion	86-50-0		Previously evaluated, no further monitoring required.		
Heptachlor ^C	76-44-8	0.05	Previously evaluated, no further monitoring required.		
Heptachlor Epoxide ^C	1024-57-3		<0.05	b	A
Hexachlorocyclohexane Alpha-BHC ^C	319-84-6		<0.05	b	A
Hexachlorocyclohexane Beta-BHC ^C	319-85-7		< 0.05	b	A

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
Hexachlorocyclohexane Gamma-BHC (synonym = Lindane)	58-89-9		Previously evaluated, no further monitoring required.		
Kepone	143-50-0		<0.40	b	A
Malathion	121-75-5		Previously evaluated, no further monitoring required.		
Methoxychlor	72-43-5		Previously evaluated, no further monitoring required.		
Mirex	2385-85-5		Previously evaluated, no further monitoring required.		
Parathion	56-38-2		Previously evaluated, no further monitoring required.		
PCB Total ^C	1336-36-3	7.0	<7.0	b	A
Toxaphene ^C	8001-35-2	5.0	<5.0	b	A
2-(2,4,5-Trichlorophenoxy) propionic acid (synonym = Silvex)	93-72-1		Applicable to PWS waters only		
Tributyltin	60-10-5		Previously evaluated, no further monitoring required.		
BA	ASE NEU	JTRAI	LEXTRACTABLES		
Acenaphthene	83-32-9	10.0	Previously evaluated, no further monitoring required.		
Anthracene	120-12-7	10.0	Previously evaluated, no further monitoring required.		
Benzidine ^C	92-87-5		Previously evaluated, no further monitoring required.		
Benzo (a) anthracene ^C	56-55-3	10.0	Previously evaluated, no further monitoring required.		
Benzo (b) fluoranthene ^C	205-99-2	10.0	Previously evaluated, no further monitoring required.		
Benzo (k) fluoranthene ^C	207-08-9	10.0	Previously evaluated, no further monitoring required.		
Benzo (a) pyrene ^C	50-32-8	10.0	Previously evaluated, no further monitoring required.		
Bis 2-Chloroethyl Ether ^C	111-44-4		Previously evaluated, no further monitoring required.		
Bis 2-Chloroisopropyl Ether	108-60-1		Previously evaluated, no further monitoring required.		
Bis-2-Ethylhexyl Phthalate ^C	117-81-7	10.0	Previously evaluated, no further monitoring required.		
Butyl benzyl phthalate	85-68-7	10.0	Previously evaluated, no further monitoring required.		
2-Chloronaphthalene	91-58-7		Previously evaluated, no further monitoring required.		
Chrysene ^C	218-01-9	10.0	Previously evaluated, no further monitoring required.		
Dibenz(a,h)anthracene ^C	53-70-3	20.0	Previously evaluated, no further monitoring required.		
1,2-Dichlorobenzene	95-50-1	10.0	Previously evaluated, no further monitoring required.		
1,3-Dichlorobenzene	541-73-1	10.0	Previously evaluated, no further monitoring required.		
1,4-Dichlorobenzene	106-46-7	10.0	Previously evaluated, no further monitoring required.		
3,3-Dichlorobenzidine ^C	91-94-1		Previously evaluated, no further monitoring required.		
Diethyl phthalate	84-66-2	10.0	Previously evaluated, no further monitoring required.		
Dimethyl phthalate	131-11-3		Previously evaluated, no further monitoring required.		
Di-n-Butyl Phthalate	84-74-2	10.0	Previously evaluated, no further monitoring required.		
2,4-Dinitrotoluene	121-14-2	10.0	Previously evaluated, no further monitoring required.		
1,2-Diphenylhydrazine ^C	122-66-7		<10.0	b	A
Fluoranthene	206-44-0	10.0	Previously evaluated, no further monitoring required.		
Fluorene	86-73-7	10.0	Previously evaluated, no further monitoring required.		
Hexachlorobenzene ^C	118-74-1		Previously evaluated, no further monitoring required.		
Hexachlorobutadiene ^C	87-68-3		Previously evaluated, no further monitoring required.		
Hexachlorocyclopentadiene	77-47-4		Previously evaluated, no further monitoring required.		
Hexachloroethane ^C	67-72-1		Previously evaluated, no further monitoring required.		
Indeno(1,2,3-cd)pyrene ^C	193-39-5	20.0	Previously evaluated, no further monitoring required.		

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Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
Isophorone ^C	78-59-1	10.0	Previously evaluated, no further monitoring required.		
Nitrobenzene	98-95-3	10.0	Previously evaluated, no further monitoring required.		
N-Nitrosodimethylamine ^C	62-75-9		Previously evaluated, no further monitoring required.		
N-Nitrosodi-n-propylamine ^C	621-64-7		Previously evaluated, no further monitoring required.		
N-Nitrosodiphenylamine ^C	86-30-6		Previously evaluated, no further monitoring required.		
Pyrene	129-00-0	10.0	Previously evaluated, no further monitoring required.		
1,2,4-Trichlorobenzene	120-82-1	10.0	Previously evaluated, no further monitoring required.		
		VOL	ATILES		
Acrolein	107-02-8		Previously evaluated, no further monitoring required.		
Acrylonitrile ^C	107-13-1		Previously evaluated, no further monitoring required.		
Benzene ^C	71-43-2	10.0	Previously evaluated, no further monitoring required.		
Bromoform ^C	75-25-2	10.0	Previously evaluated, no further monitoring required.		
Carbon Tetrachloride ^C	56-23-5	10.0	Previously evaluated, no further monitoring required.		
Chlorobenzene	108-90-7	50.0	Previously evaluated, no further monitoring required.		
Chlorodibromomethane C	124-48-1	10.0	Previously evaluated, no further monitoring required.		
Chloroform	67-66-3	10.0	Previously evaluated, no further monitoring required.		
Dichlorobromomethane ^C	75-27-4	10.0	Previously evaluated, no further monitoring required.		
1,2-Dichloroethane ^C	107-06-2	10.0	Previously evaluated, no further monitoring required.		
1,1 -Dichloroethylene	75-35-4	10.0	Previously evaluated, no further monitoring required.		
1,2-trans-dichloroethylene	156-60-5		Previously evaluated, no further monitoring required.		
1,2-Dichloropropane ^C	78-87-5		Previously evaluated, no further monitoring required.		
1,3-Dichloropropene ^C	542-75-6		<20.0	b	A
Ethylbenzene	100-41-4	10.0	Previously evaluated, no further monitoring required.		
Methyl Bromide	74-83-9		Previously evaluated, no further monitoring required.		
Methylene Chloride ^C	75-09-2	20.0	Previously evaluated, no further monitoring required.		
1,1,2,2-Tetrachloroethane ^C	79-34-5		Previously evaluated, no further monitoring required.		
Tetrachloroethylene	127-18-4	10.0	Previously evaluated, no further monitoring required.		
Toluene	10-88-3	10.0	Previously evaluated, no further monitoring required.		
1,1,2-Trichloroethane ^C	79-00-5		Previously evaluated, no further monitoring required.		
Trichloroethylene ^C	79-01-6	10.0	Previously evaluated, no further monitoring required.		
Vinyl Chloride ^C	75-01-4	10.0	Previously evaluated, no further monitoring required.		
	R	ADIO	NUCLIDES		
Beta Particle & Photon Activity (mrem/yr)	N/A		Applicable to PWS waters only		
Combined Radium 226 and 228 (pCi/L)	N/A		Applicable to PWS waters only		
Gross Alpha Particle Activity (pCi/L)	N/A		Applicable to PWS waters only		
Uranium	N/A		Applicable to PWS waters only		
	ACI	D EXT	RACTABLES	•	
2-Chlorophenol	95-57-8	10.0	Previously evaluated, no further monitoring required.		
2,4 Dichlorophenol	120-83-2	10.0	Previously evaluated, no further monitoring required.		
2,4 Dimethylphenol	105-67-9	10.0	Previously evaluated, no further monitoring required.		
2,4-Dinitrophenol	51-28-5		Previously evaluated, no further monitoring required.		
2-Methyl-4,6-Dinitrophenol	534-52-1		<10.0	b	A
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Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)		Data Eval
Nonylphenol	104-40-51		NEW REQUIREMENT. Needs to be sampled.		
Pentachlorophenol ^C	87-86-5	50.0	Previously evaluated, no further monitoring required		
Phenol	108-95-2	10.0	Previously evaluated, no further monitoring required		
2,4,6-Trichlorophenol ^C	88-06-2	10.0	Previously evaluated, no further monitoring required.		
	M	ISCEL	LANEOUS		
Ammonia-N (mg/L) (Annual)	766-41-7	0.2 mg/L	Default = 9 mg/L	a	C.2
Ammonia-N (mg/L) (Wet Season)	766-41-7	0.2 mg/L	Default = 9 mg/L	a	C.2
Chloride (mg/L)	16887-00-6		74 mg/L	b	C.1
TRC (mg/L)	7782-50-5	0.1 mg/L	Default = 20 mg/L	a	C.2
Cyanide, Free	57-12-5	10.0	Previously evaluated, no further monitoring required.		
Diox in (2,3,7,8-tetrachlorodibenzo-p-dioxin)	1746-01-6	0.01	Applicable to Paper Mills & Oil Refineries only		
Foaming Agents (as MBAS)	N/A		Applicable to PWS waters only		
Hydrogen Sulfide	7783-06-4		<0.1 mg/L	b	A
Nitrate as N (mg/L)	14797-55-8		Applicable to PWS waters only		
Sulfate (mg/L)	N/A		Applicable to PWS waters only		
Total Dissolved Solids (mg/L)	N/A		Applicable to PWS waters only		

The **superscript "C"** following the parameter name indicates that the substance is a known or suspected carcinogen; human health criteria at risk level 10° .

CASRN = Chemical Abstract Service Registry Number for each parameter is referenced in the current Water Quality Standards. A unique numeric identifier designating only one substance. The Chemical Abstract Service is a division of the American Chemical Society.

"Source of Data" codes:

a = default effluent concentration

b = data from permittee monitoring

"Data Evaluation" codes:

See section titled PROTOCOL FOR THE EVALUATION OF EFFLUENT TOXIC POLLUTANTS for an explanation of the code used.

STAT.EXE Results

	Ammonia-N (Wet)
Ammonia-N (Annual) Chronic averaging period = 30	Chronic averaging period = 30
WLAa = 37	WLAa = 42
WLAa = 37 $WLAc = 3.3$	WLAa = 42 $WLAc = 6.6$
Q.L. = 0.2	Q.L. = 0.2
# samples/mo. = 30	# samples/mo. = 30
# samples/wk. = 7	# samples/wk. = 7
Summary of Statistics:	Summary of Statistics:
# observations = 1	# observations = 1
Expected Value = 9	Expected Value = 9
Variance = 29.16	Variance = 29.16
C.V. $= 0.6$	C.V. $= 0.6$
97th percentile daily values $= 21.9007$	97th percentile daily values $= 21.9007$
97th percentile 4 day average = 14.9741	97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544	97th percentile 30 day average= 10.8544
# < Q.L. = 0	# < Q.L. = 0
Model used = BPJ Assumptions, type 2 data	Model used = BPJ Assumptions, type 2 data
A limit is needed based on Chronic Toxicity	A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 6.65831130827382	Maximum Daily Limit = 13.3166226165476
Average Weekly Limit = 4.06627870076135	Average Weekly Limit = 8.1325574015227
Average Monthly Limit = 3.3	Average Monthly Limit $= 6.6$
,	The data are: 9
The data are: 9	
<u>Copper</u>	<u>Chloride</u>
Chronic averaging period = 4	Chronic averaging period = 4
Chronic averaging period = 4 WLAa = 9.6	Chronic averaging period = 4 WLAa = 890
Chronic averaging period = 4 WLAa = 9.6 WLAc = 6.7	Chronic averaging period = 4 WLAa = 890 WLAc = 240
Chronic averaging period = 4 WLAa = 9.6 WLAc = 6.7 Q.L. = 0.5	Chronic averaging period = 4 WLAa = 890 WLAc = 240 Q.L. = 0
Chronic averaging period = 4 WLAa = 9.6 WLAc = 6.7 Q.L. = 0.5 # samples/mo. = 1	Chronic averaging period = 4 WLAa = 890 WLAc = 240 Q.L. = 0 # samples/mo. = 1
Chronic averaging period = 4 WLAa = 9.6 WLAc = 6.7 Q.L. = 0.5	Chronic averaging period = 4 WLAa = 890 WLAc = 240 Q.L. = 0
Chronic averaging period = 4 WLAa = 9.6 WLAc = 6.7 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics:	Chronic averaging period = 4 WLAa = 890 WLAc = 240 Q.L. = 0 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics:
Chronic averaging period = 4 WLAa = 9.6 WLAc = 6.7 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 26	Chronic averaging period = 4 WLAa = 890 WLAc = 240 Q.L. = 0 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1
Chronic averaging period = 4 WLAa = 9.6 WLAc = 6.7 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics:	Chronic averaging period = 4 WLAa = 890 WLAc = 240 Q.L. = 0 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics:
Chronic averaging period = 4 WLAa = 9.6 WLAc = 6.7 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 26	Chronic averaging period = 4 WLAa = 890 WLAc = 240 Q.L. = 0 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1
Chronic averaging period = 4 WLAa = 9.6 WLAc = 6.7 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 26 Expected Value = 1.14523 Variance = 1.85211 C.V. = 1.188338	Chronic averaging period = 4 WLAa = 890 WLAc = 240 Q.L. = 0 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 74
Chronic averaging period = 4 WLAa = 9.6 WLAc = 6.7 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 26 Expected Value = 1.14523 Variance = 1.85211	Chronic averaging period = 4 WLAa = 890 WLAc = 240 Q.L. = 0 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 74 Variance = 1971.36 C.V. = 0.6 97th percentile daily values = 180.072
Chronic averaging period = 4 WLAa = 9.6 WLAc = 6.7 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 26 Expected Value = 1.14523 Variance = 1.85211 C.V. = 1.188338	Chronic averaging period = 4 WLAa = 890 WLAc = 240 Q.L. = 0 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 74 Variance = 1971.36 C.V. = 0.6
Chronic averaging period = 4 WLAa = 9.6 WLAc = 6.7 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 26 Expected Value = 1.14523 Variance = 1.85211 C.V. = 1.188338 97th percentile daily values = 4.30769	Chronic averaging period = 4 WLAa = 890 WLAc = 240 Q.L. = 0 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 74 Variance = 1971.36 C.V. = 0.6 97th percentile daily values = 180.072
Chronic averaging period = 4 WLAa = 9.6 WLAc = 6.7 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 26 Expected Value = 1.14523 Variance = 1.85211 C.V. = 1.188338 97th percentile daily values = 4.30769 97th percentile 4 day average = 2.76966	Chronic averaging period = 4 WLAa = 890 WLAc = 240 Q.L. = 0 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 74 Variance = 1971.36 C.V. = 0.6 97th percentile daily values = 180.072 97th percentile 4 day average = 123.120
Chronic averaging period = 4 WLAa = 9.6 WLAc = 6.7 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 26 Expected Value = 1.14523 Variance = 1.85211 C.V. = 1.188338 97th percentile daily values = 4.30769 97th percentile 4 day average = 2.76966 97th percentile 30 day average = 1.61260	Chronic averaging period = 4 WLAa = 890 WLAc = 240 Q.L. = 0 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 74 Variance = 1971.36 C.V. = 0.6 97th percentile daily values = 180.072 97th percentile 4 day average = 123.120 97th percentile 30 day average = 89.2479
Chronic averaging period = 4 WLAa = 9.6 WLAc = 6.7 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 26 Expected Value = 1.14523 Variance = 1.85211 C.V. = 1.188338 97th percentile daily values = 4.30769 97th percentile 4 day average = 2.76966 97th percentile 30 day average = 1.61260 # < Q.L. = 0	Chronic averaging period = 4 WLAa = 890 WLAc = 240 Q.L. = 0 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 74 Variance = 1971.36 C.V. = 0.6 97th percentile daily values = 180.072 97th percentile 4 day average = 123.120 97th percentile 30 day average = 89.2479 # < Q.L. = 0
Chronic averaging period = 4 WLAa = 9.6 WLAc = 6.7 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 26 Expected Value = 1.14523 Variance = 1.85211 C.V. = 1.188338 97th percentile daily values = 4.30769 97th percentile 4 day average = 2.76966 97th percentile 30 day average = 1.61260 # < Q.L. = 0 Model used = lognormal No Limit is required for this material The data are: 4.7, 4.5,7.2,10, 0.5, 0.5, 0.5, 0.5, 0.5,	Chronic averaging period = 4 WLAa = 890 WLAc = 240 Q.L. = 0 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 74 Variance = 1971.36 C.V. = 0.6 97th percentile daily values = 180.072 97th percentile 4 day average = 123.120 97th percentile 30 day average = 89.2479 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data
Chronic averaging period = 4 WLAa = 9.6 WLAc = 6.7 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 26 Expected Value = 1.14523 Variance = 1.85211 C.V. = 1.188338 97th percentile daily values = 4.30769 97th percentile 4 day average = 2.76966 97th percentile 30 day average = 1.61260 # < Q.L. = 0 Model used = lognormal No Limit is required for this material	Chronic averaging period = 4 WLAa = 890 WLAc = 240 Q.L. = 0 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 74 Variance = 1971.36 C.V. = 0.6 97th percentile daily values = 180.072 97th percentile 4 day average = 123.120 97th percentile 30 day average = 89.2479 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material

TRC

```
Chronic averaging period = 4
WLAa = 0.02
WLAc = 0.011
Q.L. = 0.1
\# samples/mo. = 360
\# samples/wk. = 84
Summary of Statistics:
# observations = 1
Expected Value = 20
Variance = 144
C.V.
          = 0.6
97th percentile daily values = 48.6683
97th percentile 4 day average = 33.2758
97th percentile 30 day average= 24.1210
\# < Q.L. = 0
Model used = BPJ Assumptions, type 2 data
A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 1.60883226245855E-02
Average Weekly Limit = 7.46083616211286E-03
Average Monthly Limit = 7.00467354100591E-03
```

The data are: 20

APPENDIX D

RATIONALE FOR TOXICS MANAGMENT PROGRAM REQUIREMENTS

Per DEQ Guidance Memo (GM) #00-2012, this discharge requires WET monitoring, because it is a municipal sewage treatment plant with a design flow greater than 1 MGD, the STP has a pretreatment program, the discharge results in an Instream Waste Concentration (IWC) of 96%, and the receiving stream is listed as impaired for aquatic life use.

The WET evaluation conducted during the previous reissuance did not indicate a WET limit was required for this discharge, and that continued acute toxicity testing was not necessary. As such, the facility was required to conduct annual chronic WET testing using *Ceriodaphnia dubia* and *Pimephales promelas*. Results from these tests are tabulated below, and were evaluated in accordance with GM #00-2012. Due to the high IWC, the WLA_c is sufficiently low to cause the DEQ STAT evaluation software to recommend a limit for all calculable NOEC values. All tests during the previous permit cycle resulted in a No Observable Effect Concentration (NOEC) of 100%. Furthermore, in all tests, survival in 100% effluent was 100% following exposure for 48 hours and there was no significant or recurring degree of inverse dose response at this time interval. These results affirmatively validate that the effluent is not chronically toxic and strongly supports the absence of acute toxicity. Therefore, best professional judgment was utilized and no WET limit was required at this reissuance. This protocol is in-line with the previous permit determination and standard DEQ WET evaluation procedures.

Per GM #00-2012 and EPA permit application requirements, continued annual chronic WET monitoring using *Ceriodaphnia dubia* and *Pimephales promelas* is required in the reissued permit. Effluent samples shall continue to be collected during the period of July 1^{st} – September 30^{th} . The bioassays shall include 5 geometric test concentrations (preferably 0.5 series) and 1 control. Any test resulting in an NOEC equal to 100% (TU_c = 1.0) is considered to not demonstrate toxicity. A WET limit may be applied if the mean TU_c exceeds 1.0. The permit allows DEQ to require acute toxicity monitoring should the chronic 48-HR LC₅₀ data indicate potential acute toxicity.

	CI	nronic WET Test Data Sur	mmary		
	Cerio	daphnia dubia	Pimephales promelas		
Monitoring	48 HR LC50	6 Day NOEC	48 HR LC50	7 Day NOEC	
Period		Survival/Reproduction		Survival/Growth	
2006	>100	100/100	>100	100/100	
2007	>100	100/100	>100	100/100	
2008	>100	100/100	>100	100/100	
2009	>100	100/100	>100	100/100	
2010	>100	100/100	>100	100/100	

WETLIM10 RESULTS

	Spread	dsheet fo	or det	ermina	tion of V	NET tes	st endpo	oints or	· WET I	imits		
	•											
	Excel 97			Acute End	point/Permit	Limit	Use as LC ₅₀ i	n Special Co	ndition, as 1	· ΓUa on DMR	ł.	
	Revision Da	te: 01/10/05		1.00.0				1	1			
	File: WETL	IM10 yls		ACUTE	100% =	NOAEC	LC50 =	NΔ	% Use as	NA	TUa	
	(MIX.EXE requ			AGGIL	10070 =	HOALO	2031	TVA	70 000 00	10/4	1	
				ACUTE WL	Aa	0.3108	Note: Inform t	the permittee	that if the mea	an of the data	a exceeds	
							this TUa:	1.0	a limit may ı			
				Chronic En	dpoint/Permit	Limit	Use as NOE	in Special C	Condition, as	S TUc on DN	/IR	
				CHRONIC	1.52595292		NOEC =		% Use as	1.51	TUc	
				вотн*	3.10800008	TU₀	NOEC =	33	% Use as	3.03	TUc	
Enter data i	n the cells w	ith blue type:		AML	1.52595292	TUc	NOEC =	66	% Use as	1.51	TUc	
Entry Date:		02/17/11		ACUTE WI	_Aa,c	3.108		Note: Inform	the permittee	that if the m	nean	
Facility Nam	e:	Moores Ck Re	gional STP	CHRONIC \		1.0433333		of the data ex			1.0	
VPDES Num		VA0025518			acute expressed a			a limit may re				
Outfall Numb		001								_		
				% Flow to b	e used from N	/IIX.EXE		Difuser /mod	deling study	2		
Plant Flow:		15	MGD					Enter Y/N	N			
Acute 1Q10:			MGD	100				Acute		:1		
Chronic 7Q1	10:	0.65	MGD	100	%			Chronic	1	:1		
		llate CV? (Y/N ulate ACR? (Y/N		N N			, same species reater/less than			Go to Page Go to Page		
IWC _a		96.52509653	% Plant	flow/plant flo	w + 1O10	NOTE: If the	e IWCa is >33°	% specify the				
IWC _c		95.84664537		flow/plant flo			C = 100% tes					
VVCc		95.04004557	70 Flain	llow/plant no	W + 7Q10	NOAL	_C = 100 /6 tes	L/enapoint 10	use			
Dilution, acut	te .	1.036	100/I	WCa								
Dilution, acut		1.043333333										
, 5.110	-						ĺ				1	
WLAa		0.3108	Instream c	riterion (0.3 T	Ua) X's Dilution	n, acute						
WLA _c					Uc) X's Dilution							
WLA _{a,c}					rts acute WLA t		S					
10D /	abasada asd		LOFONIO	O (D-4I: :	40 % -1-1-		tables Day 2				-	
ACR -acute/o							e tables Page 3	5)				
	ent of variation eA		Default of the Default = 0		re available, us	e lables Page	2					
Constants	eВ		Default = 0									
	eС		Default = 0									
	ec				No. of cample	1	**The Maximum	Daily Limit is c	alculated from	the lowest		
	eD eD		Default = 2	.43 (1 samb)	INU. UI SAITIDIE					e driven by the	ACR.	
		2.4334175	Default = 2	.43 (1 samp)	No. or sample		LTA, X's eC. Th	ne LTAa,c and N	IDE asing it are			
	eD				No. or sample		LTA, X's eC. Th	e LI Aa,c and N	DE using it are			
LTA _{a,c}	eD	2.4334175		s eA	No. of sample		LTA, X's eC. Th	e LIAa,c and N	libe using it und	Rounded No	OEC's	%
LTA _{a,c}	eD	2.4334175 1.277216128 0.62708225	WLAa,c X	's eA eB		(Protects fro			L using it are		1	
LTAa,c LTAc MDL** with L	eD .TA _{a,c}	2.4334175 1.277216128 0.62708225 3.108000076	WLAa,c X' WLAc X's	s eA eB NOEC =	32.175031		om acute/chron	ic toxicity)	DE doing it die	NOEC =	33	%
LTAa,c LTAc MDL** with L MDL** with L	eD TA _{a,c} TA _c	2.4334175 1.277216128 0.62708225 3.108000076 1.52595292	WLAa,c X's WLAc X's TUc	s eA eB NOEC =	32.175031 65.532821	(Protects fro	om acute/chron	ic toxicity)	DE doing it die	NOEC = NOEC =	33 66	%
LTAa,c LTAc MDL** with L MDL** with L	eD TA _{a,c} TA _c	2.4334175 1.277216128 0.62708225 3.108000076	WLAa,c X' WLAc X's	s eA eB NOEC =	32.175031 65.532821		om acute/chron	ic toxicity)		NOEC =	33	%
LTAa,c LTAc MDL** with L MDL** with L AML with low	eD TA _{a,c} TA _c vest LTA	2.4334175 1.277216128 0.62708225 3.108000076 1.52595292	WLAa,c X' WLAc X's TUc TUc	s eA eB NOEC = NOEC = NOEC =	32.175031 65.532821 65.532821	(Protects fro	om acute/chron	ic toxicity)		NOEC = NOEC =	33 66	%
LTAa,c LTAc MDL** with L MDL** with L AML with low	eD .TA.a.c .TA.c vest LTA ACUTE ENDI	2.4334175 1.277216128 0.62708225 3.108000076 1.52595292 1.52595292	WLAa,c X WLAc X's TUb TUb TUb S NEEDED,	s eA eB NOEC = NOEC = NOEC =	32.175031 65.532821 65.532821	(Protects fro Lowest LTA	om acute/chron	ic toxicity)		NOEC = NOEC =	33 66 66	%

	DILUTION SE	OMMEND			
Table 4.		Monitoring		Limit	
		% Fffluent	TUc	% Effluent	TUc
Dilution series based of	n data mean	100	1.0		
Dilution series to use for	or limit			66	1.5151515
Dilution factor to recom	nmend:	0.5		0.8124038	
Dilution series to recor	nmend:	100.0	1.00	100.0	1.00
		50.0	2.00	81.2	1.23
		25.0	4.00	66.0	1.52
		12.5	8.00	53.6	1.87
		6.25	16.00	43.6	2.30
Extra diluti	ions if needed	3.12	32.05	35.4	2.83
		1.56	64.10	28.7	3.48

WET STAT RESULTS

WEI DIMI RESOLIS
Chemical = WET Chronic, C. dubia & P. promelas
Chronic averaging period = 4
WLAa = 3.108
WLAc = 1.043333
Q.L. = 1
samples/mo. = 1
samples/wk. = 1
Summary of Statistics:
" 1
observations = 5
Expected Value = 1
Variance = .36
C.V. = 0.6
97th percentile daily values = 2.43341
97th percentile 4 day average = 1.66379
97th percentile 30 day average= 1.20605
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data
A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 1.52595253717061
Average Weekly Limit = 1.52595253717061
Average Monthly Limit = 1.52595253717061
The data are: 1,1,1,1,1

APPENDIX E

PERMIT CHANGES AND BASES FOR SPECIAL CONDITIONS

Tabulated below are the sections of the permit, with any changes and the reasons for the changes identified. Also provided is the basis for each of the permit special conditions.

Cover Page

- Content and format as prescribed by the VPDES Permit Manual.
- City reference removed.
- Part I.A.1. **Effluent Limitations and Monitoring Requirements:** Bases for effluent limits provided in previous pages of this fact sheet. Monitoring requirements as prescribed by the VPDES Permit Manual.

Updates Part I.A.1. of the previous permit with the following:

- More stringent Ammonia-N (Dec-Apr) limits were included.
- Copper limit was removed.
- Ammonia-N (May-Nov) monitoring frequency was reduced to 3 Days/Week.
- E. coli limits were added; TRC limits were removed due to facility upgrade to UV disinfection.
- Orthophosphate, TP, TP-Monthly, Nitrate-Nitrite, TN-Monthly were removed and TP and TN annual loading limits were removed.
- TP and TN concentration limits were added.
- A footnote was added referencing this facility's coverage under the Nutrient General Permit.
- A footnote was removed referencing a schedule of compliance.
- A footnote added to clarify that the Total Nitrogen Calendar Year and Total Phosphorus Calendar Year are annual average concentration limits.
- Part I.B. **TRC and E. Coli Effluent Limitations and Monitoring Requirements:** *Updates Part I.B of the previous permit.* Required by Sewage Collection and Treatment (SCAT) Regulations and 9 VAC 25-260-170, Bacteria; other waters. Also, 40 CFR 122.41(e) requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. This ensures proper operation of chlorination equipment to maintain adequate disinfection.
- Part I.C. **Effluent Limitations and Monitoring Requirements Additional Instructions:** *Updates Part I.D. of the previous permit.* Authorized by VPDES Permit Regulation, 9 VAC 25-31-190 J 4 and 220 I. This condition is necessary when a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.
- Part I.D. **Pretreatment Program Requirements:** *Updates Part I.E. of the previous permit.* VPDES Permit Regulation, 9 VAC 25-31-730 through 900, and 40 CFR part 403 require certain existing and new sources of pollution to meet specified regulations.
- Part I.E. **Toxics Management Program Requirements:** *Updates Part I.F. of the previous permit.* VPDES Permit Regulation, 9 VAC 25-31-210 and 220 I, requires monitoring in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act.

- Part I.F.1. **95% Capacity Reopener:** *Identical to Part I.G.1. of the previous permit.* Required by VPDES Permit Regulation, 9 VAC 25-31-200 B 4 for certain permits.
- Part I.F.2. **Indirect Dischargers**: *Identical to Part I.G.2. of the previous permit.* Required by VPDES Permit Regulation, 9 VAC 25-31-200 B 1 for all STPs that receive waste from someone other than the owner of the treatment works.
- Part I.F.3. **Materials Handling/Storage:** *Identical to Part I.G.3. of the previous permit.* 9 VAC 25-31-280.B.2. requires that the types and quantities of "wastes, fluids, or pollutants which are ... treated, stored, etc." be addressed for all permitted facilities.
- Part I.F.4. **O&M Manual Requirement:** *Updates Part I.G.5. of the previous permit.* Required by Code of Virginia 62.1-44.19, SCAT Regulations 9 VAC 25-790, and VPDES Permit Regulation 9 VAC 25-31-190 E for all STPs. Added requirement to describe procedures for documenting compliance with the permit requirement that there shall be no discharge of floating solids or visible foam in other than trace amounts.
- Part I.F.5. **CTC/CTO Requirement:** *Updates Part I.G.4. of the previous permit.* Required by Code of Virginia 62.1-44.19, SCAT Regulations 9 VAC 25-790, and VPDES Permit Regulation 9 VAC 25-31-190 E for all STPs.
- Part I.F.6. **SMP Requirement:** *Updates Part I.H.1. of the previous permit.* VPDES Permit Regulation 9 VAC 25-31-100 P, 220 B 2, and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. Technical requirements are derived from the Virginia Pollution Abatement Permit Regulation (9 VAC 25-32-10 *et seq.*)
- Part I.F.7. **Licensed Operator Requirement:** *Identical to Part I.G.6. of the previous permit.* The VPDES Permit Regulation 9 VAC 25-31-200 C, the Code of Virginia 54.1-2300 et seq., and Rules and Regulations for Waterworks and Wastewater Works Operators 18 VAC 160-20-10 et seq., require licensure of operators. A class II license is indicated for this facility.
- Part I.F.8. **Reliability Class:** *Identical to Part I.G.7. of the previous permit.* Required by SCAT Regulations 9 VAC 25-790.
- Part I.F.9. **Water Quality Criteria Monitoring:** *Updates Part I.G.9. of the previous permit.* State Water Control Law at 62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, subpart 131.11. To ensure that water quality criteria are maintained, the permittee is required to analyze the facility's effluent for the substances noted in Attachment A of this VPDES permit.
- Part I.F.10. **Treatment Works Closure Plan:** *Updates Part I.G.8. of the previous permit.* Required for all STPs per the State Water Control Law at 62.1-44.18.C. and 62.1-44.15:1.1., and the SCAT Regulations at 9 VAC 25-790-450.E. and 9 VAC 25-790-120.E.3.

Part I.F.11. Reopene rs:

- a. *New Requirement:* Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The reopener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.
- b. *New Requirement:* 9 VAC 25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade.
- c. *New Requirement:* 9 VAC 25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.
- d. *Updates Part I.H.2. of the previous permit:* Required by the VPDES Permit Regulation, 9 VAC 25-31-220.C, for all permits issued to STPs.
- Part I.F.12. **Suspension of concentration limits for E3/E4 facilities:** *New Requirement.* 9 VAC 25-40-70 B authorizes DEQ to approve an alternate compliance method to the technology-based effluent concentration limitations as required by subsection A of this section. Such alternate compliance method shall be incorporated into the permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility to allow the suspension of applicable technology-based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system that includes operation of installed nutrient removal technologies at the treatment efficiency levels for which they were designed.
- Part II **Conditions Applicable to All VPDES Permits:** *Identical to Part II of previous permit.* VPDES Permit Regulation 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

DELETIONS

Tabulated below are the sections of the previous permit that were deleted and the basis for this action.

- Part I.A.2. **Sludge Limitations and Monitoring Requirements:** This requirement was removed because the facility no longer composts sludge on-site.
- Part I.C. Schedule of Compliance: This requirement was removed because the facility has completed the schedule.
- Part I.G.12. **Basis of Design Report for Nutrient Removal:** This requirement was removed at this reissuance because the facility is currently being upgraded to include enhanced nutrient removal.
- Part I.G.13. **Interim Optimization Plan for Nutrient Removal:** This requirement was removed at this reissuance because the facility is currently being upgraded to include enhanced nutrient removal
- Part I.G.14. **General Permit Controls:** This requirement was removed at this reissuance because the facility has obtained coverage under the General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia.
- Part I.H. **Sewage Sludge Requirements:** These requirements were removed because the facility no longer composts sewage sludge for sale or give-away.